

CLAIMS

What is claimed is:

- 1 1. A method for measuring a desired condition, comprising:
2 directing a spread spectrum signal into a medium;
3 detecting a parameter that corresponds to the signal directed into the medium;
4 generating a measured parameter signal from the detected parameter; and
5 analyzing the measured parameter signal to determine the desired condition.

- 1 2. The method of claim 1, wherein the steps of directing a spread spectrum
2 signal into a medium comprises transmitting a spread spectrum current signal into the
3 medium.

- 1 3. The method of claim 2, wherein the steps of detecting a parameter that
2 corresponds to the signal directed into the medium comprises measuring a voltage
3 signal.

- 1 4. The method of claim 1, wherein the steps of directing a spread spectrum
2 signal into a medium comprises transmitting a spread spectrum voltage signal into the
3 medium.

- 1 5. The method of claim 4, wherein the steps of detecting a parameter that
2 corresponds to the signal directed into the medium comprises measuring a current
3 signal.

1 6. The method of claim 1, wherein the steps of generating a measured
2 parameter signal from the detected parameter comprises generating an impedance
3 signal.

1 7. The method of claim 6, wherein the steps of analyzing the measured
2 parameter signal to determine the desired condition comprises analyzing the
3 impedance signal to determine a contact impedance of a device electrode.

1 8. The method of claim 6, wherein the steps of analyzing the measured
2 parameter signal to determine the desired condition comprises analyzing the
3 impedance signal to determine a heart rate of a patient.

1 9. The method of claim 6, wherein the steps of analyzing the measured
2 parameter signal to determine the desired condition comprises analyzing the
3 impedance signal to determine a respiration rate of a patient.

1 10. The method of claim 1, wherein the steps of directing a spread spectrum
2 signal into a medium comprises transmitting a spread spectrum ultrasound signal into
3 the medium.

1 11. The method of claim 10, wherein the steps of analyzing the measured
2 parameter signal to determine the desired condition comprises analyzing echoes of the
3 ultrasound signal to determine the heart rate of a patient.

1 12. The method of claim 1, wherein the steps of directing a spread spectrum
2 signal into a medium comprises transmitting a spread spectrum light signal into the
3 medium.

1 13. The method of claim 12, wherein the steps of analyzing the measured
2 parameter signal to determine the desired condition comprises analyzing detected red
3 and/or infrared light level to determine the oxygenation level of a patient's blood.

1 14. The method of claim 1, further comprising generating a clock signal that
2 is used to spread the signal directed into the medium across a desired frequency.

1 15. The method of claim 14, further comprising randomizing the clock
2 signal.

1 16. The method of claim 15, wherein the clock signal is randomized with a
2 random number generator and a divider.

1 17. A spread spectrum measurement device, comprising:
2 means for directing a spread spectrum signal into a medium;
3 means for detecting a parameter that corresponds to the signal directed into the
4 medium;
5 means for generating a measured parameter signal from the detected
6 parameter; and

7 means for analyzing the measured parameter signal to determine a desired
8 condition.

1 18. A spread spectrum measurement device at least partially comprised
2 within a computer readable medium, comprising:

3 logic configured to direct a spread spectrum signal into a medium;

4 logic configured to detect a parameter that corresponds to the signal directed
5 into the medium;

6 logic configured to generate a measured parameter signal from the detected
7 parameter; and

8 logic configured to analyze the measured parameter signal to determine a
9 desired condition.

1 19. A spread spectrum measurement device, comprising:

2 a medium interface;

3 a signal transmitter configured to produce a spread spectrum input signal, the
4 signal transmitter being in electrical communication with the medium interface;

5 a signal detector configured to detect a spread spectrum signal at the medium
6 interface, the signal detector being in electrical communication with the medium
7 interface; and

8 a signal processor configured to analyze the spread spectrum signal detected
9 by the signal detector.

1 20. The device of claim 19, wherein the signal transmitter transmits a spread
2 spectrum electrical signal.

1 21. The device of claim 19, wherein the signal transmitter transmits a spread
2 spectrum ultrasound signal.

1 22. The device of claim 19, wherein the signal transmitter transmits a spread
2 spectrum light signal.

1 23. The device of claim 19, further comprising a random signal generator in
2 electrical communication with the signal transmitter and the signal detector.